zole, omeprazole or pantoprazole (the QALY gains were 0.0002, 0.0003 and 0.0003, respectively). There were also marginal cost savings achieved by esomeprazole (1.23 EUR versus lansoprazole, 2.27 EUR versus omeprazole and 1.51 EUR versus pantoprazole), therefore esomeprazole was projected to have a dominant position versus other PPIs in the cost-effectiveness analysis. **CONCLUSIONS:** Esomeprazole provides greater effectiveness at a lower cost compared with other PPIs currently reimbursed in Poland in the treatment of GERD.

PGI21
EVALUATION OF THE COST EFFECTIVENESS OF RIFAXIMIN-á 550MG IN THE REDUCTION OF RECURRENCE OF OVERT HEPATIC ENCEPHALOPATHY IN SWEDEN
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OBJECTIVES: Hepatic encephalopathy (HE) is associated with high morbidity and mortality. Rifaximin-α 550mg reduces the recurrence of episodes of overt HE, and hospital utilisation. We characterised the cost effectiveness of rifaximin-α 550mg versus standard care (lactulose) in patients with liver cirrhosis in Sweden. **METHODS:** This economic evaluation used a Markov state transition model. The outcome metric was the ICER, derived from estimates of the cost/QALYs. The payer perspective was that of the Swedish healthcare system. Outcome data were from two rifaximin-α 550mg trials. Population outcome data were from a complementary study of patients with liver cirrhosis treated in Sweden. Swedish Costs data (2012) were derived from published sources. Health-related utility was estimated indirectly from disease-specific quality of life RCT data. The time horizon was five years. Costs and benefits were discounted at 3.5%. Extensive sensitivity analyses were carried out. Real world data were also applied into the model for length of stay in hospital and the number of admissions. **RESULTS:** The average cost of the included elements of care was SEK302,520 (€32,667) for rifaximin-α 550mg and SEK393,777 (€42,522) for lactulose, a difference of -SEK91,257 (-€9,854). The corresponding values for benefit were 2.38 QALYs/person and 1.83 QALYs/person, respectively, a difference of 0.55 QALYs over the five year period. This translated into a dominant base-case ICER at five years, meaning that rifaximin-α 550mg was both less costly and more beneficial. Key parameters that impacted the ICER included length of stay in hospital and the number of admissions to hospital. Evaluation to 10 years also resulted in a dominant ICER, although the lifetime ICER was SEK5,918 (€639) per QALY. **CONCLUSIONS:** In Sweden, treatment with rifaximin-α 550mg in patients with recurrent HE in the context of liver cirrhosis was cost effective compared to standard care, by reducing episodes of overt HE.

PGI22
ECONOMIC ASSESSMENT OF ELTROMBOPAG IN THE TREATMENT OF THROMBOCYTOPENIA IN ITALY
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OBJECTIVES: This study aimed to estimate the cost-effectiveness ratio of eltrombopag in the treatment of thrombocytopenia during antiviral therapy (AVT) in HCV-patients with advanced liver disease (ALD) in Italy. **METHODS:** The economic assessment was conducted according to a Markov model, which enabled the evolution of hypothetical cohorts of patients undergoing different diagnosis and treatment protocols and the respective costs and benefits to be quantified. Three alternative scenarios were set up: 1) eltrombopag treatment in both enabling phase and during AVT; 2) no eltrombopag and no AVT; 3) no eltrombopag treatment and administration of a reduced dose of peg-IFN (according to platelet count), and no peg-IFN treatment for patients with the lowest platelet count. Parameter uncertainty and robustness of the results were assessed through a one-way sensitivity analysis and a multivariate probabilistic sensitivity analysis. **RESULTS:** The results demonstrate that scenario 1 is associated with a cost per QALY of €30,020.94 in comparison with scenario 2. The ICER reaches a value of 2,752.44 €/QALY when scenario 1 is compared with scenario 3. The ICERs therefore are considered sustainable considering the threshold value generally taken into account by NICE (20,000–40,000 €/QALY). **CONCLUSIONS:** The use of eltrombopag in thrombocytopenic HCV-patients can increase sustained virological response, leading to a reduction in disease progression and thus a drop in the number of patients with ALD. Preventing the onset of complications and acting early to reduce the incidence of complex conditions that absorb more resources thus seems a rational choice that is consistent with the patient's preferences and the needs of the healthcare system. This economic assessment suggests that eltrombopag administration is indicated.

PGI23
STUDY ON COST-EFFECTIVENESS ANALYSIS FOR ULCERATIVE COLITIS TREATMENT: A SYSTEMATIC REVIEW OF LITERATURE FROM 2004-2014
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OBJECTIVES: Ministry of Health, Labour and Welfare of Japan aims for the introduction of Health Technology Assessment in FY2016. Compared to foreign countries, a lack of resources for conducting the analysis has been pointed out in Japan. However, pharmaceutical and medical device industries are urged to seek practical approaches utilizing best available resources. The objective of this study was to review articles for cost-effectiveness studies of ulcerative colitis (UC) and to evaluate analytical approaches that can be applied to Japanese environment. **METHODS:** The literature search was conducted in MEDLINE and JDream III. Inclusion criteria are studies of 1) treatment for UC, 2) cost-effectiveness analysis (CEA), 3) published in the past 10 years. Studies were assessed for the followings: country, model structure and simulation method, time horizon, perspective, source of key parameters, results, and key drivers determined from sensitivity analysis. **RESULTS:** Nine studies were reviewed in details. Markov (6 articles) and decision tree (2 articles) models were adopted, and time horizon varied from 12 weeks of clinical trial periods to lifetime. Studies additionally considering surgery and treatment costs of colorectal cancer referred to other studies or official medical fees. Utility scores were referred to other studies (9 articles). Disutility of surgery was estimated based on assumptions. Parameters which became key drivers for these analyses varied among studies. **CONCLUSIONS:** Data collection methods adopted in prior studies were applicable to CEA for UC in Japan. Cost data can be obtained not only from questionnaire survey to doctors but commercial database. Because evidence on utility scores of Japanese population is still limited, further studies will be needed, especially on patients in different phases of UC treatment.

PGI24
EVALUATING THE COST-EFFECTIVENESS OF PROLONGED-RELEASE TACROLIMUS RELATIVE TO IMMEDIATE-RELEASE TACROLIMUS IN LIVER TRANSPLANT PATIENTS BASED ON DATA FROM ROUTINE CLINICAL PRACTICE
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OBJECTIVES: As of 2014, there were approximately 8,300 patients with a functioning liver transplant in the UK Transplant Registry, with 880 liver transplants performed in 2013–14 alone. As the number of surviving liver transplant recipients continues to increase, healthcare expenditure in these patients should be periodically reviewed to maximize value for money. With tacrolimus representing the current cornerstone of post-transplant immunosuppressive therapy, the present study objective was to evaluate the cost-effectiveness of prolonged-release (PR) tacrolimus versus immediate-release (IR) tacrolimus. **METHODS:** A model was developed in Microsoft Excel to evaluate the cost and effectiveness of immunosuppressive regimens in liver transplant recipients. The model captured costs associated with immunosuppressive medications, retransplantation and acute rejection. Three-year patient and graft survival data were taken from a recent retrospective European registry analysis and initial dose data were taken from the prescribing information. Costs were taken from the British National Formulary and the National Health Service National Tariff and expressed in 2014 pounds sterling. **RESULTS:** Over a 3 year time horizon, the number needed to treat (NNT) with PR tacrolimus relative to IR tacrolimus was ~13 to avoid one graft loss and 17 to avoid one death. The model was sensitive to dosing assumptions, with incremental cost estimates varying between a saving of GBP 2,236 per treated patient, assuming the same dosing of PR and IR (per kilogram bodyweight) and an increase of GBP 781 using RCT dose data. **CONCLUSIONS:** Data from a recent analysis of routine clinical practice data in liver transplant recipients on PR and IR tacrolimus showed significant differences in long-term graft survival in favor of PR tacrolimus. Modeling these data in a UK population showed that, over a three-year time horizon one graft would be saved for approximately every 13 patients treated with PR tacrolimus with minimal impact on costs.

PGI25
COST EFFECTIVENESS OF RIFAXIMIN-Á 550MG IN THE REDUCTION OF RECURRENCE OF OVERT HEPATIC ENCEPHALOPATHY IN UNITED KINGDOM
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OBJECTIVES: Hepatic encephalopathy (HE) is associated with high morbidity and mortality. Rifaximin-α 550mg reduces the recurrence of episodes of overt HE. We determined the cost effectiveness of rifaximin-α 550mg versus standard care (lactulose) in patients with cirrhosis in the UK. **METHODS:** This economic evaluation used a Markov state transition model. The outcome metric was the ICER, derived from estimates of the cost/QALYs. The payer perspective was that of UK National Health Service. Outcome data were from two rifaximin-α 550mg trials. Population outcome data were from a complementary study of patients with liver cirrhosis treated within the NHS. UK Costs data (2012) were derived from published sources. Health-related utility was estimated indirectly from disease-specific quality of life RCT data. The time horizon was five years. Costs and benefits were discounted at 3.5%. Extensive sensitivity analyses were carried out. Real world data describing the use of rifaximin-α 550mg in the UK NHS were also applied into the model for length of stay in hospital and the number of admissions. **RESULTS:** The average cost for the included elements of care was £22,971 for rifaximin-α 550mg and £23,545 for lactulose, a difference of -£573. The corresponding values for benefit were 2.36 QALYs/person and 1.83 QALYs/person, respectively, a difference of 0.53 QALYs. This translated into a dominant base-case ICER. Key parameters that impacted the ICER included length of stay in hospital and the number of admissions to hospital. Evaluation to 10 years and lifetime resulted in ICERs of £4,470/QALY and £7,215/QALY, respectively. **CONCLUSIONS:** Rifaximin-α 550mg in patients with recurrent HE in the context of liver cirrhosis represented good value for money compared to standard care, by reducing episodes of overt HE, the likelihood of hospital admission and hospital length of stay.

PGI26
COST-EFFECTIVENESS OF EVEROLIMUS IN LIVER TRANSPLANTATION
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OBJECTIVES: The purpose of this study was to analyze the cost-effectiveness of the association of everolimus (EVR) with reduced tacrolimus doses (rTAC) in liver transplantation patients with renal dysfunction. **METHODS:** A cost-effectiveness analysis

was conduced from the National Public Health System (SUS) perspective. A Markov model was constructed using TreeAge Software to simulate the clinical of patients that undergo to liver transplantation, with 10 years of horizontal time. In the model, the expected cost and effectiveness were compared between EVR+rTAC versus TAC. In both treatment strategies, there were the possibilities of rejection, graft loss, renal failure and renal transplantation and death. The probabilities were taken from a multicenter clinical randomized study that followed the patients for 2 years after liver transplantation using TAC or EVR+rTAC. The chosen endpoints were rejection, graft loss and renal dysfunction (creatinine clearance<60, MDRD4, mL/min/1.73m2). The estimative of 525 patients that will need a liver transplantation at SUS per year was used in Monte Carlo microssimulation, based on 2014 data. **RESULTS:** EVR+rTAC strategy preserved 26.2% of renal function, decreased 7.2% of rejections, avoided 1.9% of renal transplantation and 7.8% of liver re-transplantation. The treatment with EVR+rTAC increased the annual public costs in $172.78 (the first year) and $361.08 (the first two years) per patient. The simulation of EVR+rTAC only in patient who will have renal dysfunction after liver transplantation resulted in an annual median cost of $251.02 per patient per complication avoided, 37% less than when all patients used TAC ($1,312.32). The Monte Carlo microsimulation for 525 potential patients resulted in a cost of $1,072.51 per year per patient free of complications treated with EVR+rTAC, 18% less than when all patients were treated with TAC. **CONCLUSIONS:** Everolimus associated with reduced tacrolimus doses is cost-effective when analyzing the renal dysfunction avoided in the liver transplantation.

PGI27

EARLIER DETECTION AND TREATMENT OF NON-ALCOHOLIC FATTY LIVER DISEASE: AN ECONOMIC EVALUATION TO APPRAISE AN INNOVATIVE DIAGNOSTIC PATHWAY TO DETECT AND INTERVENE WHERE THERE ARE KNOWN RISK FACTORS

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OBJECTIVES: The prevalence of liver disease is increasing and often remains undetected until the late stages.The study estimated cost-effectiveness of an innovative diagnostic pathway (IDP) targeting adults with risk factors of non-alcoholic fatty liver disease (NAFLD) from an NHS England perspective. **METHODS:** Economic evaluation compared IDP (algorithm applied in a general practice to identify adults with risk factors for NAFLD, then stratifying disease severity using a Fibroscan to test liver stiffness, followed by hepatologist-led treatment appropriate to disease stage) with standard care (SC, hepatology referral due to abnormal LFTs). Probabilistic modelling of NAFLD progression was combined with the diagnostic accuracy of IDP and SC estimated from a feasibility study, incorporating fibrosis stages (no/mild disease, moderate liver disease, compensated cirrhosis) split into health states: 'identified' and 'unidentified' risk factor/disease. Advanced NAFLD states were: decompensated cirrhosis, hepato-cellular carcinoma, liver transplant and death. Transition probability, utility and resource use data were based on uptodate UK sources, or – if not possible - on expert panel responses to indicate early disease management and its estimated effectiveness. Lifetime Markov cohort modelling with starting age of 68, annual cycle, and costs and utilities discounted at 3.5%-rate, was applied. Cost-effectiveness planes and cost-effectiveness acceptability curves, based on 5000-sample Monte Carlo simulation, were constructed. **RESULTS:** IDP yielded increased QALYs (95% CI) (0.24 (-0.18, 0.63)) and reduced costs (-£2661 (-10831, 7099), compared with SC, with 69.7%-probability of dominance, and 88.3%-probability of cost-effectiveness at £20000/QALY threshold. The results were associated with high levels of uncertainty due to the poor quality of data available for transition probabilities in early liver disease. **CONCLUSIONS:** Indicative economic evaluation showed that IDP may be cost-effective, compared with standard care. Due to large uncertainty of model input parameters and no data around progression and management of early liver disease, further studies on IDP implementation are needed.

PGI28

COST-EFFECTIVENESS OF SIMEPREVIR VS. TELAPREVIR FOR THE TRIPLE THERAPY OF HEPATITIS C IN KAZAKHSTAN

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OBJECTIVES: Hepatitis C Virus(HCV) is a growing health problem in the world. The aim of this study is to estimate a cost-effectiveness of a triple therapy(TT) with simeprevir compared to a TT with telaprevir for the previously treated with double therapy HCV patients in Kazakhstan. **METHODS:** Markov model build in Tree-Age Pro 2013 was used for cost-effectiveness analysis from the perspective of Ministry of Health with a lifetime horizon. The model consists of two phases: (1)period of treatment with TT (48 weeks), and (2)lifetime follow-up. Cycle of the first phase is measured in weeks, the second - in years of life. The effectiveness was determined by the sustained virologic response(SVR), defined as HCV RNA<25 IU/mL after 12 weeks after completion of antiviral therapy. Effectiveness data was obtained from published RCTs, the direct costs adjusted to local settings are expressed in 2015 Kazakhstani Tenge(KZT). The average age of reference patient was 40 years. All future costs and health outcomes(QALYs) were discounted for 3% per year. One way sensitivity analysis was performed to test the robustness of model. **RESULTS:** Over 30-year stimulation of the model, TT with simeprevir incurred 6.81mln KZT and 24.2053 QALYs per patient, whereas TT with telaprevir incurred 10.98mln KZT and 24.2593 QALYs per patient. There was insignificant difference (p>0.05) in health outcomes between options. TT with simeprevir is expected to save 4.17mln KZT per patient if replases TT with telaprevir. The results of model were robust to changes in key parameters. **CONCLUSIONS:** The introduction of simeprevir as part of TT for HCV patients that had null or partial responce to previous double antiviral therapy seems to be a cost-effective option in Kazakhstan from the perspective of Ministry of Health compared to current TT with telaprevir. These findings may better inform decision makers regarding formulary inclusion and reimbursement.

PGI29

ECONOMIC EVALUATIONS OF TREATMENTS FOR INFLAMMATORY BOWEL DISEASES

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OBJECTIVES: The last decade witnessed great advances in the treatment of inflammatory bowel diseases (IBD) with the introduction of biologic therapies. Several economic evaluations have been run to evaluate these treatments. The goal of this study was to analyze the existing evidences and key parameters included in IBD cost-effectiveness studies. **METHODS:** A systematic literature review was conducted to identify economic evaluations of IBD therapy. Electronic databases (Embase and Medline) were used to identify full economic evaluations published from 2004 to 2015. Cross-references of selected articles and gray literature search were also performed to find additional publications. The health outcomes, costs, incremental cost-effectiveness (ICERs) and cost-utility ratios (ICURs) were analyzed. **RESULTS:** The literature review allowed identifying 3,631 potentially relevant studies. Titles and abstracts screening allowed the selection of 53 articles. After assessment of those articles, 36 were found pertinent for the review. Four other studies were added from gray literature. Different treatments were evaluated including biologics (53%), immunosuppressants (3%), biologics and immunosuppressants combination (5%) and mesalamine (28%). Infliximab was the most common biologic treatment evaluated (65%). In the cost-utility analyzes (88%), 35% had utility scores derived from IBD severity scores. The remaining studies used direct and indirect utility measurement methods, including EQ-5D (43%), standard gamble (33%), time trade off (25%) and visual analog scale (8%). Markov modeling, decision tree or a combination of both were used in 38%, 38% and 5% of the studies respectively. All studies included drug acquisition costs, 50% included treatment administration costs, 65% included hospitalization costs and 45% included surgical costs. **CONCLUSIONS:** Several economic evaluations especially involving biologics were conducted in the past decade. This study showed that there are significant trends in key parameters, such as model development, utility measurements and costs included, which will be helpful in the feasibility of further cost-effectiveness analyses.

PGI30

SHOULD SOFOSBUVIR-BASED ALL-ORAL TREATMENT BE CONSIDERED IN ELDERLY CHRONIC HEPATITIS C PATIENTS?

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OBJECTIVES: A relevant proportion of patients affected by Chronic Hepatitis C(CHC) is older than 65 years. These patients have been undertreated in the past two decades, due to poor eligibility to interferon-containing regimens. New all-oral, interferon-free antivirals may represent a valuable option for this population. Our aim was to assess the cost-effectiveness of sofosbuvir plus ledipasvir(SOF/LDV) therapy in genotype 1(G1) and 4(G4) CHC elderly patients. **METHODS:** A Markov model of CHC natural history was built. The model focuses on CHC patients older than 65 years and assessed the impact of liver fibrosis (METAVIR F3 and F4), age and frailty phenotype, defined by Fried's (not frail, pre-frail and frail), on the cost-effectiveness of SOF/LDV versus no treatment. The model estimated costs, Life Years and Quality-Adjusted Life Years (QALY) using the lifetime time horizon and the National Health System perspective. Results were presented as incremental cost-effectiveness ratios (ICERs) per QALY gained. **RESULTS:** The cost-effectiveness of all-oral and IFN-free treatment regimen in HCV elderly patients is influenced by all three parameters assessed in our simulation. ICER was higher in lower fibrosis stages and increased with age and frailty phenotype. In F3 and F4 patients ICER was below 40,000 €/QALY up to age 83.3 and over 85 years in non-frail patients, up to age 79.5 and 82.5 in pre-frail and up to age 76.5 and 79.5 in frail, respectively. The ICER was more sensitive to drug price and SVR probability. Further, the mortality rate not-liver related had a higher impact in the not-frail patients. **CONCLUSIONS:** Age and fibrosis stage are not enough to assess the cost-effectiveness of anti-HCV treatment in elderly subjects. A careful assessment of the patient geriatric status should be mandatory, especially in patients older than 75 years, to better allocate the resources available and to prioritize the access to the treatment.

PGI31

KEY DRIVERS OF COST EFFECTIVENESS IN CROHN'S DISEASE

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OBJECTIVES: A published economic model of biological therapies for moderate to severe Crohn's disease was used recently in the National Institute for Health and Care Excellence (NICE) technology appraisal for vedolizumab. The objective of this study was to identify key drivers of cost effectiveness in Crohn's disease. **METHODS:** The published economic model was reconstructed using data from Bodger et al. (2009), supplemented by the vedolizumab NICE submission. Costs were updated to 2013/14, and efficacy data were taken from the submission as this used a recent network meta-analysis (NMA). The reconstructed model omitted aspects of the vedolizumab submission that were heavily criticised by the Evidence Review Group (ERG). The deterministic incremental cost-effectiveness ratios (ICER) from the reconstructed model were compared with those reported for the published model. A one-way sensitivity analysis of vedolizumab versus standard care was performed using the same assumptions as the submission base case, and the outputs of both models were compared. **RESULTS:** For the base case results, Bodger et al. reported ICERs versus standard care of £19,050 for infliximab and £7,190 for adalimumab. In contrast, the reconstructed model reported ICERs of £54,077 and £31,210. These are similar to the results from the vedolizumab submission model, indicating that the differences are principally due to the use of NMA data from the submission. The key drivers were broadly similar between the reconstructed model and the submission